

## 10/595,942-330158-EIC SEARCH

TEXT SEARCH

=&gt; d his 161

(FILE 'HCAPLUS' ENTERED AT 13:06:58 ON 07 MAY 2010)

L61 14 S L57 AND (L59 OR L60)

=&gt; d que 161

L1 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON US20090108232/  
 PN  
 L3 1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON 12031-66-2/RN  
 L4 1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON 1314-61-0/RN  
 L5 1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON 12057-24-8/RN  
 L6 4831 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L3  
 L7 SEL PLU=ON L3 1- NAME : 5 TERMS  
 L8 4918 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L7  
 L10 19677 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L4  
 L11 SEL PLU=ON L4 1- NAME : 12 TERMS  
 L12 30017 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L11  
 L14 18247 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L5  
 L15 SEL PLU=ON L5 1- NAME : 5 TERMS  
 L16 28098 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L15  
 L17 15108 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L14 AND L16  
 L19 4516 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L6 AND L8  
 L20 18206 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L10 AND L12  
 L21 39 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L17 AND L19  
 AND L20  
 L22 QUE SPE=ON ABB=ON PLU=ON (MOLAR OR MOLE) (4A) RATIO  
 L23 3 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L21 AND L22  
 L24 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L1 AND L23  
 L25 3 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON (LIO2) (2W) (TA2  
 O5)  
 L26 2 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON 0.975(3W)0.982  
 L27 18 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON GTOREQ(4A)0.97  
 5  
 L28 10 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON LTOREQ(4A)0.98  
 2  
 L29 0 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L27 AND L28  
 L30 129 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON ((LITHIUM OR  
 DILITHIUM) (A) (OXIDE OR DIOXIDE) OR LIO2 OR O2LI OR  
 LI2O OR OLI2) (5W) (TANTALUM(A) OXIDE OR TA2O5 OR O5TA)  
 L36 89176 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON BIREFRINGENCE+  
 MAX/CT  
 L38 37641 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON BIREFRING?  
 L40 19976 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON .-.0.0005  
 L41 19976 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON 0.0005  
 L42 850 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L40(4A)L41  
 L43 45 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L40(L) (L36 OR  
 L38)  
 L44 45 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L41(L) (L36 OR  
 L38)  
 L45 45 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L43 AND L44  
 L46 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L42(L) (L36 OR  
 L38)  
 L47 QUE SPE=ON ABB=ON PLU=ON LENS? OR OPTIC? OR OPTO?  
 L48 17 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L21 AND L47  
 L49 4 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L48 AND (L36  
 OR L38)  
 L50 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L49 AND ((L40  
 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46))  
 L51 3 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L48 AND L22  
 L52 5 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L48 AND (L22

# 10/595,942-330158-EIC SEARCH

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                OR L36 OR L38)
L53             3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L52 AND ((L23
                OR L24 OR L25 OR L26 OR L27 OR L28 OR L29))
L54             4 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L52 AND L30
L55             4 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L53 OR L54
L56             1 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L52 AND ((L40
                OR L41 OR L42 OR L43 OR L44 OR L45 OR L46))
L57             17 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (L48 OR L49
                OR L50 OR L51 OR L52 OR L53 OR L54 OR L55 OR L56)
L59             QUE  SPE=ON  ABB=ON  PLU=ON  PY=<2005 NOT P/DT
L60             QUE  SPE=ON  ABB=ON  PLU=ON  (PY=<2005 OR PRY=<2005 OR
                AY=<2005 OR MY=<2005 OR REVIEW/DT) AND P/DT
L61             14 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L57 AND (L59
                OR L60)

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=> d his 169

(FILE 'MEDLINE, BIOSIS, EMBASE' ENTERED AT 13:49:04 ON 07 MAY 2010)

L69 0 S L66 AND L67 AND L68

=> d que 169

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L3              1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  12031-66-2/RN
L4              1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  1314-61-0/RN
L5              1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  12057-24-8/RN

L7              SEL  PLU=ON  L3 1- NAME :      5 TERMS
L11             SEL  PLU=ON  L4 1- NAME :     12 TERMS
L15             SEL  PLU=ON  L5 1- NAME :      5 TERMS
L66             145 SEA L7
L67             262 SEA L11
L68             183 SEA L15
L69             0 SEA L66 AND L67 AND L68

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=> d his 187

(FILE 'DISSABS, PASCAL, CONFSCI, JAPIO, WPIX' ENTERED AT 14:00:40 ON 07 MAY 2010)

L87 3 S L85 OR L86  
 SAV TEMP L87 PEE942MULT/A

FILE 'HCAPLUS' ENTERED AT 14:08:48 ON 07 MAY 2010  
 SAV TEMP L61 PEE942HCP/A

FILE 'STNGUIDE' ENTERED AT 14:09:18 ON 07 MAY 2010

=> d que 187

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L3              1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  12031-66-2/RN
L4              1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  1314-61-0/RN
L5              1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  12057-24-8/RN

L7              SEL  PLU=ON  L3 1- NAME :      5 TERMS
L11             SEL  PLU=ON  L4 1- NAME :     12 TERMS
L15             SEL  PLU=ON  L5 1- NAME :      5 TERMS
L22             QUE  SPE=ON  ABB=ON  PLU=ON  (MOLAR OR MOLE) (4A)RATIO
L25             3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (LIO2) (2W) (TA2
                O5)
L26             2 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  0.975(3W)0.982
L27             18 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  GTOREQ(4A)0.97
                5

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# 10/595,942-330158-EIC SEARCH

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L28      10 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  LTREQ(4A) 0.98
          2
L30      129 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  ((LITHIUM OR
          DILITHIUM)(A)(OXIDE OR DIOXIDE) OR LIO2 OR O2LI OR
          LI2O OR OLI2)(5W)(TANTALUM(A)OXIDE OR TA2O5 OR O5TA)
L38      37641 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  BIREFRING?
L40      19976 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  .-.0.0005
L41      19976 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  0.0005
L59      QUE SPE=ON  ABB=ON  PLU=ON  PY=<2005 NOT P/DT
L60      QUE SPE=ON  ABB=ON  PLU=ON  (PY=<2005 OR PRY=<2005 OR
          AY=<2005 OR MY=<2005 OR REVIEW/DT) AND P/DT
L70      2760 SEA L7
L71      12031 SEA L11
L72      9963 SEA L15
L73      25 SEA L70 AND L71 AND L72
L74      5 SEA L73 AND L22
L75      1 SEA L73 AND L38
L76      1 SEA L74 AND L75
L77      5 SEA (L74 OR L75 OR L76)
L78      1 SEA L77 AND ((L25 OR L26 OR L27 OR L28))
L79      2 SEA L77 AND L30
L80      1 SEA L77 AND (L40 OR L41)
L81      18 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  0.0005(3A)(PLU
          S OR MINUS)
L83      1 SEA L77 AND L81
L84      5 SEA (L77 OR L78 OR L79 OR L80) OR L83
L85      0 SEA L84 AND L59
L86      3 SEA L84 AND L60
L87      3 SEA L85 OR L86

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=> dup rem 161 169 187

L69 HAS NO ANSWERS

FILE 'HCAPLUS' ENTERED AT 14:12:26 ON 07 MAY 2010

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'WPIX' ENTERED AT 14:12:26 ON 07 MAY 2010

COPYRIGHT (C) 2010 THOMSON REUTERS

PROCESSING COMPLETED FOR L61

PROCESSING COMPLETED FOR L69

PROCESSING COMPLETED FOR L87

L88 16 DUP REM L61 L69 L87 (1 DUPLICATE REMOVED)

ANSWERS '1-14' FROM FILE HCAPLUS

ANSWERS '15-16' FROM FILE WPIX

## 10/595,942-330158-EIC SEARCH

TEXT SEARCH RESULTS

=&gt; d 188 1-16 ibib ed abs hitstr hitind

L88 ANSWER 1 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2005:472377 HCAPLUS Full-text

DOCUMENT NUMBER: 143:16264

TITLE: Optical material,  
optoelectronic part and  
optoelectronic applianceINVENTOR(S): Kumatoriya, Makoto; Chiku, Shinichiro; Geho,  
Mikio; Fujii, Takashi; Kitamura, Kenji;  
Takekawa, Shunji; Nakamura, MasaruPATENT ASSIGNEE(S): National Institute for Materials Science,  
Japan

SOURCE: PCT Int. Appl., 20 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2005049897	A1	20050602	WO 2004-JP15046	2004 1013

&lt;--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL,  
PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH,  
CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU,  
MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI,  
CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1693488	A1	20060823	EP 2004-792290	2004 1013
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R: DE, FR, GB				
US 20090108232	A1	20090430	US 2006-595942	2006 0520

&lt;--

PRIORITY APPLN. INFO.:			JP 2003-392870	A
				2003 1121

&lt;--

			WO 2004-JP15046	W
				2004 1013

&lt;--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 03 Jun 2005

AB The invention relates to an optical material that is not affected by environmental changes, exhibiting a birefringence falling within the range of  $\pm 0.0005$ ; and an optoelectronic part and optoelectronic appliance including the optical material. There is provided an optical material of lithium tantalate characterized in that in the lithium tantalate the molar composition ratio of lithium oxide to

# 10/595,942-330158-EIC SEARCH

tantalum oxide ( $\text{LiO}_2/\text{Ta}_2\text{O}_5$ ) is in the range of 0.975 to 0.982. Since an optical material of high refractive index can be used in an optical system, the lens thickness can be reduced at an unchanged focal length. As a result, by the use of lens with such characteristics, not only can optoelectronic parts having realized higher levels of compactness, thin model and function enhancement be provided but also optoelectronic appliances having these characteristics can be presented.

IT 12031-66-2, Lithium tantalate  
 RL: PRP (Properties); TEM (Technical or engineered material use);  
 USES (Uses)  
 (optical material and optoelectronic application)  
 RN 12031-66-2 HCAPLUS  
 CN Lithium tantalum oxide ( $\text{LiTaO}_3$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IT 1314-61-0, Tantalum oxide  
 12057-24-8, Lithium oxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (optical material and optoelectronic application)  
 RN 1314-61-0 HCAPLUS  
 CN Tantalum oxide ( $\text{Ta}_2\text{O}_5$ ) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
 RN 12057-24-8 HCAPLUS  
 CN Lithium oxide ( $\text{Li}_2\text{O}$ ) (CA INDEX NAME)

Li—O—Li

IC ICM C30B029-30  
 ICS G02B001-00  
 CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST optical material optoelectronic lens  
 IT Lenses  
 Optical materials  
 (optical material and optoelectronic application)  
 IT 12031-66-2, Lithium tantalate  
 RL: PRP (Properties); TEM (Technical or engineered material use);  
 USES (Uses)  
 (optical material and optoelectronic application)  
 IT 1314-61-0, Tantalum oxide  
 12057-24-8, Lithium oxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (optical material and optoelectronic application)  
 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L88 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2005:1172105 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:413341  
 TITLE: Method and apparatus for manufacture of

# 10/595,942-330158-EIC SEARCH

INVENTOR(S): optical devices  
Okamoto, Tsutomu  
PATENT ASSIGNEE(S): Sony Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005309161	A	20051104	JP 2004-127182	2004 0422

PRIORITY APPLN. INFO.: <--  
JP 2004-127182  
2004  
0422  
<--

ED Entered STN: 04 Nov 2005  
AB Apparatus for manufacture of the devices includes a container for placing raw material powder, a support for placing the substrate over the container, a covering for the container and the support, and an outer container for high-temperature heat treatment of the covered materials. Manufacture of optical devices by vapor phase diffusion of oxides over substrates are claimed. Ferroelec. material may be deposited on the substrate by vapor transport equilibration.  
IT 1314-61-0, Tantalum oxide  
12057-24-8, Lithium oxide, uses  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(method and apparatus for manufacture of optical devices by vapor surface treatment of substrates)  
RN 1314-61-0 HCAPLUS  
CN Tantalum oxide (Ta2O5) (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
RN 12057-24-8 HCAPLUS  
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li\_O\_Li

IT 12031-66-2, Lithium tantalate  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(substrate; method and apparatus for manufacture of optical devices by vapor surface treatment of substrates)  
RN 12031-66-2 HCAPLUS  
CN Lithium tantalum oxide (LiTaO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IC ICM G02F001-37  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

# 10/595,942-330158-EIC SEARCH

ST substrate surface vapor treatment optical device; vapor transport equilibration ferroelec layer optical device substrate

IT Ferroelectric materials  
(method and apparatus for manufacture of optical devices by vapor surface treatment of substrates)

IT Optical instruments  
(nonlinear; method and apparatus for manufacture of optical devices by vapor surface treatment of substrates)

IT Surface treatment  
(vapor transport equilibration; method and apparatus for manufacture of optical devices by vapor surface treatment of substrates)

IT 1314-61-Q, Tantalum oxide  
12057-24-S, Lithium oxide, uses  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(method and apparatus for manufacture of optical devices by vapor surface treatment of substrates)

IT 12031-66-2, Lithium tantalate  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(substrate; method and apparatus for manufacture of optical devices by vapor surface treatment of substrates)

L88 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2005:975836 HCAPLUS Full-text

DOCUMENT NUMBER: 143:276834

TITLE: Manufacture of defect-free single crystals by Czochralski method without tailing process

INVENTOR(S): Ito, Takeshi; Hanyu, Masayuki; Matsukura, Makoto; Natori, Masaaki; Nakamura, Osamu; Furukawa, Yasunori; Matsumura, Sadao

PATENT ASSIGNEE(S): Oxide Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2005239442	A	20050908	JP 2004-47794	

2004  
0224

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PRIORITY APPLN. INFO.: JP 2004-47794

2004  
0224

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ED Entered STN: 08 Sep 2005

AB In preparation of single crystals with different composition between molten liqs. and crystals, after formation of straight body parts is finished, parts of the crystals being lifted (or stopped) are melted (by heating the molten liqs.) to be released from the liqs. The process is effective for manufacturing of twin- or microcrack-free ferroelec. crystals (e.g., Li tantalate, Li niobate, BaSr niobate) useful for optical communication devices.

IT 1314-61-Q, Tantalum oxide (Ta2O5) 12057-24-S, Lithium oxide (Li2O), processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(manufacture of defect-free oxide single crystals by Czochralski method without tailing process)

## 10/595,942-330158-EIC SEARCH

RN 1314-61-0 HCAPLUS  
CN Tantalum oxide (Ta2O5) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12057-24-8 HCAPLUS  
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li-O-Li

IT 12031-66-2P, Lithium tantalate  
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
(manufacture of defect-free oxide single crystals by Czochralski method without tailing process)  
RN 12031-66-2 HCAPLUS  
CN Lithium tantalum oxide (LiTaO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IC ICM C30B015-22  
ICS C30B029-30  
CC 76-3 (Electric Phenomena)  
Section cross-reference(s): 57  
ST defect free ferroelec oxide crystal growth Czochralski;  
lithium tantalate niobate crystal tailing free  
Czochralski; melting lifting single crystal twin microcrack prevention  
IT 554-13-2, Lithium carbonate 1313-96-8, Niobium oxide (Nb2O5)  
1314-61-0, Tantalum oxide (Ta2O5) 12057-24-8, Lithium oxide (Li2O), processes 107251-85-4, Barium niobium strontium oxide (Ba0.2NbSr0.3O3)  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
(manufacture of defect-free oxide single crystals by Czochralski method without tailing process)  
IT 12031-63-9P, Lithium niobate 12031-66-2P, Lithium tantalate  
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
(manufacture of defect-free oxide single crystals by Czochralski method without tailing process)

L88 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN  
ACCESSION NUMBER: 2005:1283325 HCAPLUS Full-text  
DOCUMENT NUMBER: 144:118343  
TITLE: Method for preparing near-stoichiometric lithium tantalate wafer  
INVENTOR(S): Wang, Haili; Xia, Changtai; Xu, Jun; Hang, Yin; Zhang, Lianhan; Liu, Junfang; Zhu, Yueqin; He, Xiaoming  
PATENT ASSIGNEE(S): Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Peop.



## 10/595,942-330158-EIC SEARCH

SOURCE: Rep. China  
Faming Zhuanli Shenqing Gongkai Shuomingshu, 7  
PP.  
CODEN: CNXXEV  
DOCUMENT TYPE: Patent  
LANGUAGE: Chinese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1621577	A	20050601	CN 2004-10067130	2004 1013

PRIORITY APPLN. INFO.: <--  
CN 2004-10067130  
2004  
1013

ED Entered STN: 08 Dec 2005

AB The title method comprises: (1) placing mixed LiTaO<sub>3</sub> and Li<sub>3</sub>TaO<sub>4</sub> blocks having pores in a platinum crucible, (2) setting or hanging lithium tantalate wafer having the same composition on the platinum wire, (3) covering with a platinum sheet which is covered by mixed LiTaO<sub>3</sub> and Li<sub>3</sub>TaO<sub>4</sub> powder and thermocouple, (4) sealing with a platinum cap on the top of the crucible, and (5) placing the crucible in a resistance furnace, heating to 1000-1400°C, and maintaining the temperature for 1-200 h. By lithium ion diffusion, the crystal composition approaches the stoichiometric proportion. The method is simple, and the produced wafer has wide application in optical waveguide, photoelec. switch, periodic polarization, integrated photoelec. device and other fields.

IT 12031-66-2, Lithium tantalate

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(method for preparing near-stoichiometric lithium tantalate wafer)

RN 12031-66-2 HCAPLUS

CN Lithium tantalum oxide (LiTaO<sub>3</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IT 1314-61-0, Tantalum pentoxide

RL: RCT (Reactant); RACT (Reactant or reagent)  
(method for preparing near-stoichiometric lithium tantalate wafer)

RN 1314-61-0 HCAPLUS

CN Tantalum oxide (Ta<sub>2</sub>O<sub>5</sub>) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 12057-24-8P, Lithium oxide,  
preparation

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(method for preparing near-stoichiometric lithium tantalate wafer)

RN 12057-24-8 HCAPLUS

CN Lithium oxide (Li<sub>2</sub>O) (CA INDEX NAME)

Li\_\_O\_\_Li

## 10/595,942-330158-EIC SEARCH

IC ICM C30B029-30  
 CC 75-1 (Crystallography and Liquid Crystals)  
 Section cross-reference(s): 73  
 ST near stoichiometric lithium tantalate wafer  
 prepn  
 IT Optical waveguides  
 Photoelectric devices  
 Sintering  
 (method for preparing near-stoichiometric lithium  
 tantalate wafer)  
 IT 12031-90-2P, Lithium tantalum oxide (Li3TaO4)  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
 process); SPN (Synthetic preparation); PREP (Preparation); PROC  
 (Process)  
 (method for preparing near-stoichiometric lithium  
 tantalate wafer)  
 IT 12031-86-3, Lithium tantalate  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
 process); TEM (Technical or engineered material use); PROC  
 (Process); USES (Uses)  
 (method for preparing near-stoichiometric lithium  
 tantalate wafer)  
 IT 1308-38-9, Chromic oxide, uses 1309-37-1, Ferric oxide, uses  
 1309-48-4, Magnesium oxide, uses 1312-43-2, Indium trioxide  
 1313-97-9, Neodymium sesquioxide 1314-13-2, Zinc oxide, uses  
 1314-37-0, Ytterbium oxide 1317-34-6, Manganic oxide  
 1344-70-3, Copper oxide 1345-13-7, Cerous oxide 12060-08-1,  
 Scandium oxide 12061-16-4, Erbium sesquioxide  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (method for preparing near-stoichiometric lithium  
 tantalate wafer)  
 IT 554-13-2, Lithium carbonate 1314-61-0,  
 Tantalum pentoxide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (method for preparing near-stoichiometric lithium  
 tantalate wafer)  
 IT 12057-24-8P, Lithium oxide,  
 preparation  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (method for preparing near-stoichiometric lithium  
 tantalate wafer)

L88 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2003:260910 HCAPLUS Full-text

DOCUMENT NUMBER: 138:278488

TITLE: Pretreatment method for hologram recording  
 medium

INVENTOR(S): Kitamura, Kenji; Takekawa, Shunji; Nakamura,  
 Masaru; Yamaji, Takashi; Hatano, Hideki

PATENT ASSIGNEE(S): Independent Administrative Institution  
 National Institute for Materials Science,  
 Japan

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 20030064294	A1	20030403	US 2002-235853	

## 10/595,942-330158-EIC SEARCH

2002  
0906

<--

JP 2003084652      A      20030319      JP 2001-272499

2001  
0907

<--

JP 3728410      B2      20051221  
PRIORITY APPLN. INFO.:      JP 2001-272499      A

2001  
0907

<--

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 04 Apr 2003

AB Disclosed is a pretreatment method for a hologram recording medium used in the hologram recording method in which information signals loaded on signal beam are recorded by injecting coherent signal beam and reference beam to the hologram recording medium which is exposed to first light having first wavelength of UV band or short-wavelength visible light band in advance in order to generate light-induced absorption, wherein the coherent signal beam and reference beam each having longer wavelength than the first wavelength. The pretreatment method comprises subjecting the hologram recording medium to oxidation treatment prior to the irradiation of the first light has been completed.

IT 1314-61-0, Tantalum oxide  
12031-66-2, Lithium tantalate  
12057-24-8, Lithium oxide, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(pretreatment method for hologram recording medium containing)  
RN 1314-61-0 HCAPLUS  
CN Tantalum oxide (Ta2O5) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12031-66-2 HCAPLUS  
CN Lithium tantalum oxide (LiTaO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

RN 12057-24-8 HCAPLUS  
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li\_O\_Li

IC ICM G03H001-04  
INCL 430001000; 430002000; 359007000; 430394000  
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
IT Optical reflectors  
(pretreatment method for hologram recording medium containing)  
IT 1313-96-8, Niobium oxide 1314-61-0, Tantalum oxide 12031-63-9, Lithium niobate (LiNbO3)  
12031-66-2, Lithium tantalate  
12057-24-8, Lithium oxide, uses  
195144-63-9, Lithium oxide (LiO2)  
RL: TEM (Technical or engineered material use); USES (Uses)  
(pretreatment method for hologram recording medium containing)

L88 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN

## 10/595,942-330158-EIC SEARCH

ACCESSION NUMBER: 2002:439054 HCAPLUS Full-text  
 DOCUMENT NUMBER: 137:25970  
 TITLE: lithium tantalate single  
 crystals and optical devices using  
 them  
 INVENTOR(S): Miyamoto, Akio; Kitamura, Kenji; Furukawa,  
 Yasunori; Takekawa, Shunji  
 PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan; National  
 Institute for Research In Inorganic Materials  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2002167297	A	20020611	JP 2000-363531	2000 1129

PRIORITY APPLN. INFO.: <--  
 JP 2000-363531  
 2000  
 1129  
 <--

ED Entered STN: 11 Jun 2002

AB The single crystals are obtained from Li-excess melts and show Na content  $\leq 10$  ppm and  
 molar ratio  $\text{Li}_2\text{O}/(\text{Ta}_2\text{O}_5 + \text{Li}_2\text{O})$  0.4900-0.5200. The crystals are useful for quasi-  
 phase-matched 2nd-harmonic generation (QPM-SHG) devices, gas detectors, etc. The  
 crystals show decreased optical absorption at 280-320 nm and good resistance to optical  
 damages at  $< 390$  nm.

IT 1314-61-0, Tantalum oxide (  
 $\text{Ta}_2\text{O}_5$ ) 12031-66-2, lithium  
 tantalum oxide ( $\text{LiTaO}_3$ )  
 12057-24-8, lithium oxide, uses  
 RL: DEV (Device component use); TEM (Technical or engineered  
 material use); USES (Uses)  
 (lithium tantalate single crystals with  
 decreased UV absorption for optical devices)

RN 1314-61-0 HCAPLUS

CN Tantalum oxide ( $\text{Ta}_2\text{O}_5$ ) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12031-66-2 HCAPLUS

CN Lithium tantalum oxide ( $\text{LiTaO}_3$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

RN 12057-24-8 HCAPLUS

CN Lithium oxide ( $\text{Li}_2\text{O}$ ) (CA INDEX NAME)

Li\_O\_Li

IC ICM C30B029-30

ICS G02B001-02; G02F001-03; G02F001-355; G02F001-37

## 10/595,942-330158-EIC SEARCH

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST lithium tantalate single crystal  
optical device; nonlinear optical device  
lithium tantalate single crystal; UV absorption  
decrease lithium tantalate single crystal

IT Optical materials  
(lithium tantalate single crystals with  
decreased UV absorption for optical devices)

IT Optical instruments  
(nonlinear; lithium tantalate single  
crystals with decreased UV absorption for optical  
devices)

IT 7440-23-5, Sodium, miscellaneous  
RL: MSC (Miscellaneous)  
(content-controlled; lithium tantalate  
single crystals with decreased UV absorption for  
optical devices)

IT 1314-61-0, Tantalum oxide (Ta<sub>2</sub>O<sub>5</sub>) 12031-66-2, Lithium  
tantalum oxide (LiTaO<sub>3</sub>)  
12057-24-8, Lithium oxide, uses  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(lithium tantalate single crystals with  
decreased UV absorption for optical devices)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE  
THIS RECORD (1 CITINGS)

L88 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2001:397790 HCAPLUS Full-text

DOCUMENT NUMBER: 135:12383

TITLE: Single crystal of lithium niobate or tantalate  
and its optical element, and process  
and apparatus for producing an oxide single  
crystal

INVENTOR(S): Kitamura, Kenji; Furukawa, Yasunori; Takekawa,  
Shunji; Kimura, Shigeyuki

PATENT ASSIGNEE(S): National Institute for Research In Organic  
Materials, Japan

SOURCE: U.S. Pat. Appl. Publ., 31 pp., Division of  
U.S. Ser. No. 521,899.  
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 20010001944	A1	20010531	US 2001-754187	2001 0105
			<--	
US 6464777	B2	20021015		
US 6673330	B1	20040106	US 2000-521899	2000 0309
			<--	
JP 2001287999	A	20011016	JP 2000-341130	2000 1108
			<--	
JP 4107365	B2	20080625		
JP 2003267798	A	20030925	JP 2000-341132	2000

## 10/595,942-330158-EIC SEARCH

1108

JP 2007269626 A 20071018 JP 2007-100442

2007  
0406

JP 2008176335 A 20080731 JP 2008-39835

2008  
0221

PRIORITY APPLN. INFO.: JP 1999-84999 A  
1999  
0326

JP 1999-317565 A  
1999  
1109

JP 1999-317572 A  
1999  
1109

US 2000-521899 A3  
2000  
0309

JP 2000-341130 A3  
2000  
1108

JP 2000-341132 A3  
2000  
1108

ED Entered STN: 03 Jun 2001

AB A single crystal of Li niobate or tantalate is grown from a melt of a composition having an excessive Li over its stoichiometric composition, and having a molar fraction of  $\text{Li}_2\text{O}/(\text{Nb}_2\text{O}_5+\text{Li}_2\text{O})$  or  $\text{Li}_2\text{O}/(\text{Ta}_2\text{O}_5+\text{Li}_2\text{O})$  within a range of at least 0.490 and <0.500, wherein at least one element selected from the group consisting of Mg, Zn, Sc and In is contained in an amount of from 0.1 to 3.0 mol based on the total amount of the at least one element, Nb and Li, or the total amount of the at least one element, Ta and Li. A process is described for producing an oxide single crystal by rotation pulling by a double crucible made of a noble metal consisting of an outer crucible made of a noble metal, and a cylindrical inner crucible for intersecting the surface of a melt in the outer crucible and connecting the melt at the bottom of the melt. The process comprises pulling a single crystal from the inner crucible while directly measuring the weight of the growing crystal for growing, simultaneously supplying a gas into a closed container, supplying a powder material preserved in the closed container between the outer crucible and the inner crucible through a supply tube in the same amount by weight as the crystal growth, and growing the crystal by rotating the double crucible.

IT 12031-66-2, Lithium tantalate

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(single crystal of lithium niobate or tantalate and optical element, and process and apparatus for producing oxide single crystal)

RN 12031-66-2 HCAPLUS

CN Lithium tantalum oxide ( $\text{LiTaO}_3$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IT 1314-61-0, Tantalum oxide (

# 10/595,942-330158-EIC SEARCH

ta2o5) 12057-24-8, Lithium  
oxide (li2o), processes  
RL: PEP (Physical, engineering or chemical process); PROC  
(Process)  
(single crystal of lithium niobate or tantalate grown from melt  
of composition having molar fraction of Li2O/(Nb2O5+Li2O) or Li2O/  
(Ta2O5+Li2O) within range of at least 0.490 and <0.500)

RN 1314-61-0 HCAPLUS  
CN Tantalum oxide (Ta2O5) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12057-24-8 HCAPLUS  
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li-O-Li

IC ICM C30B015-00  
INCL 117013000  
CC 75-1 (Crystallography and Liquid Crystals)  
Section cross-reference(s): 73  
ST lithium niobate tantalate crystal optical element; oxide  
crystal growth app noble metal double crucible; polarization  
inversion optical element lithium niobate tantalate  
IT Czochralski crystal growth  
Czochralski crystal growth apparatus  
Electrooptical materials  
Nonlinear optical materials  
(single crystal of lithium niobate or tantalate and  
optical element, and process and apparatus for producing  
oxide single crystal)  
IT Oxides (inorganic), processes  
RL: PEP (Physical, engineering or chemical process); PROC  
(Process)  
(single crystal of lithium niobate or tantalate and  
optical element, and process and apparatus for producing  
oxide single crystal)  
IT 12031-63-9, Lithium niobate 12031-66-2,  
Lithium tantalate  
RL: DEV (Device component use); PEP (Physical, engineering or  
chemical process); PROC (Process); USES (Uses)  
(single crystal of lithium niobate or tantalate and  
optical element, and process and apparatus for producing  
oxide single crystal)  
IT 1313-96-8, Niobium oxide (nb2o5) 1314-61-0,  
Tantalum oxide (ta2o5)  
12057-24-8, Lithium oxide (li2o), processes  
RL: PEP (Physical, engineering or chemical process); PROC  
(Process)  
(single crystal of lithium niobate or tantalate grown from melt  
of composition having molar fraction of Li2O/(Nb2O5+Li2O) or Li2O/  
(Ta2O5+Li2O) within range of at least 0.490 and <0.500)  
OS.CITING REF COUNT: 9 THERE ARE 9 CAPLUS RECORDS THAT CITE  
THIS RECORD (12 CITINGS)

L88 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN  
ACCESSION NUMBER: 2001:821445 HCAPLUS Full-text  
DOCUMENT NUMBER: 136:76838  
TITLE: Nearly stoichiometric LiTaO3 for bulk  
quasi-phase-matched devices  
AUTHOR(S): Furukawa, Y.; Nakamura, M.; Takekawa, S.;  
Kitamura, K.; Hatanaka, T.; Nakamura, K.; Ito,

## 10/595,942-330158-EIC SEARCH

CORPORATE SOURCE: H.; Alexandrovski, A.; Fejer, M. M.  
 SOURCE: Oxide Corporation, Yamanashi, 408-0044, Japan  
 Trends in Optics and Photonics (2001  
 ), 50(Advanced Solid-State Lasers), 685-687  
 CODEN: TOPRBS  
 PUBLISHER: Optical Society of America  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 12 Nov 2001

AB Nearly stoichiometric LiTaO<sub>3</sub> (SLT) crystals exhibited a high photorefractive damage resistance along with a negligibly small green-induced IR absorption, even without the addition of MgO dopants. A bulk periodically poled device was successfully fabricated using a 3 mm-thick SLT crystal.

IT 12031-66-2D, Lithium tantalum  
 oxide (LiTaO<sub>3</sub>), nearly stoichiometric  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (nearly stoichiometric LiTaO<sub>3</sub> for bulk quasi-phase-matched  
 devices)

RN 12031-66-2 HCAPLUS

CN Lithium tantalum oxide (LiTaO<sub>3</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IT 1314-61-0, Tantalum oxide  
 12057-24-8, Lithium oxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation using; nearly stoichiometric LiTaO<sub>3</sub> for bulk  
 quasi-phase-matched devices)

RN 1314-61-0 HCAPLUS

CN Tantalum oxide (Ta<sub>2</sub>O<sub>5</sub>) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12057-24-8 HCAPLUS

CN Lithium oxide (Li<sub>2</sub>O) (CA INDEX NAME)

Li\_O\_Li

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)

ST nearly stoichiometric lithium tantalate quasi  
 phase matched device

IT Optical instruments  
 (quasi-phase-matched; nearly stoichiometric LiTaO<sub>3</sub> for bulk  
 quasi-phase-matched devices)

IT 12031-66-2D, Lithium tantalum  
 oxide (LiTaO<sub>3</sub>), nearly stoichiometric  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (nearly stoichiometric LiTaO<sub>3</sub> for bulk quasi-phase-matched  
 devices)

IT 1314-61-0, Tantalum oxide  
 12057-24-8, Lithium oxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation using; nearly stoichiometric LiTaO<sub>3</sub> for bulk  
 quasi-phase-matched devices)

OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE  
 THIS RECORD (6 CITINGS)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE



## 10/595,942-330158-EIC SEARCH

FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L88 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2000:721528 HCAPLUS Full-text  
 DOCUMENT NUMBER: 134:48858  
 TITLE: Domain switching performance of stoichiometric  
 LiTaO3 for bulk quasi-phase matching devices  
 AUTHOR(S): Kitamura, Kenji; Furukawa, Yasunori; Takekawa,  
 Shunji; Hatanaka, Takaaki; Ito, Hiromasa;  
 Gopalan, Verkatraman  
 CORPORATE SOURCE: National Institute for Research in Inorganic  
 Materials, Tsukuba-shi, 305-0044, Japan  
 SOURCE: OSA Trends in Optics and Photonics Series (   
 2000), 34(Advanced Solid State  
 Lasers), 321-323  
 CODEN: OTOPFZ; ISSN: 1094-5695  
 PUBLISHER: Optical Society of America  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 13 Oct 2000

AB The authors grew near stoichiometric LiTaO3 crystal from a Li-rich melt using a novel  
 double crucible Czochralski method. The ferroelec. domain shape and domain wall  
 smoothness were compared between the conventional and near stoichiometric LiTaO3  
 crystals. The domain shape under the elec. field at room temperature strongly depended  
 on the densities of nonstoichiometric defects. The domain shape in the conventional  
 LiTaO3 is basically triangular while it is hexagonal in the stoichiometric LiTaO3. The  
 sides of hexagon in the stoichiometric LiTaO3 are perpendicular to the crystallog. X  
 axes, i.e., parallel to the X faces. Therefore, considerably smooth domain walls can  
 be obtain in the stoichiometric LiTaO3 when the periodical domain structure is designed  
 as each domain elongates along the Y axis. This result is promising a great  
 improvement by using stoichiometric LiTaO3 in fabricating quasi-phase matching  
 wavelength conversion devices with high performances.

IT 12031-66-2, Lithium tantalate  
 LiTaO3

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (domain switching performance of stoichiometric LiTaO3 for bulk  
 quasi-phase matching devices)

RN 12031-66-2 HCAPLUS

CN Lithium tantalum oxide (LiTaO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IT 1314-61-0, Tantalum pentoxide  
 12057-24-8, Lithium oxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (domain switching performance of stoichiometric LiTaO3 prepared  
 using)

RN 1314-61-0 HCAPLUS

CN Tantalum oxide (Ta2O5) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12057-24-8 HCAPLUS

CN Lithium oxide (Li2O) (CA INDEX NAME)

Li\_O\_Li

## 10/595,942-330158-EIC SEARCH

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 76  
 ST domain switching phase matching stoichiometric lithium tantalate  
 IT Electric field effects  
 Ferroelectric domain  
 Interface roughness  
 Nonlinear optical properties  
 Optical harmonic generation  
 (domain switching performance of stoichiometric LiTaO3 for bulk quasi-phase matching devices)  
 IT 12031-66-2, Lithium tantalate  
 LiTaO3  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (domain switching performance of stoichiometric LiTaO3 for bulk quasi-phase matching devices)  
 IT 554-13-2, Lithium carbonate 1314-61-3,  
 Tantalum pentoxide 12057-24-8,  
 Lithium oxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (domain switching performance of stoichiometric LiTaO3 prepared using)  
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)  
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 1996:338226 HCAPLUS Full-text  
 DOCUMENT NUMBER: 125:21962  
 ORIGINAL REFERENCE NO.: 125:4215a,4218a  
 TITLE: Articles comprising a substrate made of single crystal and a process for producing the same  
 INVENTOR(S): Kawaguchi, Tatsuo; Imaeda, Minoru; Fukuda, Tsuguo  
 PATENT ASSIGNEE(S): Ngk Insulators, Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 24 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 707096	A2	19960417	EP 1995-303946	1995 0608
			<--	
EP 707096	A3	19970305		
EP 707096	B1	20011017		
R: DE, FR, GB				
US 5650006	A	19970722	US 1995-473964	1995 0607
			<--	
JP 09118595	A	19970506	JP 1995-236983	1995 0914
			<--	
JP 3725589	B2	20051214		
PRIORITY APPLN. INFO.:			JP 1994-222081	A 1994 0916

## 10/595,942-330158-EIC SEARCH

<--  
JP 1995-83939 A  
1995  
0410

<--  
JP 1995-213462 A  
1995  
0822

<--  
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 12 Jun 1996

AB Articles (e.g., optical waveguides) are described which comprise a single crystal substrate supporting a film having a composition of  $\text{LiNb}_{1-x}\text{Ta}_x\text{O}_3$  ( $0 < x \leq 0.8$ ) formed by LPE. The film has an x-ray rocking curve half width that is not larger than that of the substrate, and the substrate may have the composition  $\text{LiNb}_{1-z}\text{Ta}_z\text{O}_3$  ( $0 \leq z < 0.8$ ;  $z < x$ ). In forming the films, the substrate is contacted with supercooled liquid phase of a melt consisting mainly of  $\text{Li}_2\text{O}_3$ ,  $\text{Nb}_2\text{O}_5$ ,  $\text{Ta}_2\text{O}_5$  and a flux to produce the film. The composition of the liquid phase is within a region encompassed by a straight line K linking a point A (95, 5, 0) and a point B (95, 2, 3), a straight line G linking the point A (95, 5, 0) and a point C (60, 40, 0), a straight line H linking the point C (60, 40, 0) and a point D (60, 0, 40), a straight line J linking the point B (95, 2, 3) and a point E (0, 40, 60) and a curved line I defining a composition whose saturation temperature is not more than 1200° as shown in a triangular diagram of a pseudo-ternary system of  $\text{LiNbO}_3$ - $\text{LiTaO}_3$ -a melting medium.

IT 1314-61-0, Tantalum oxide  
12031-66-2, Lithium tantalate  
12057-24-8, Lithium oxide, processes  
RL: PEP (Physical, engineering or chemical process); PROC  
(Process)  
(articles comprising lithium niobate tantalate films on a  
single crystal substrate and their production)

RN 1314-61-0 HCAPLUS

CN Tantalum oxide ( $\text{Ta}_2\text{O}_5$ ) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12031-66-2 HCAPLUS

CN Lithium tantalum oxide ( $\text{LiTaO}_3$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

RN 12057-24-8 HCAPLUS

CN Lithium oxide ( $\text{Li}_2\text{O}$ ) (CA INDEX NAME)

Li\_O\_Li

IC ICM C30B019-02

ICS C30B029-30

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 75

IT Waveguides

(optical, articles comprising lithium niobate  
tantalate films on a single crystal substrate and their production)

IT 12031-63-9, Lithium niobate 115428-32-5, Lithium niobate  
tantalate ( $\text{LiNb}_{0.5}\text{Ta}_{0.5}\text{O}_3$ ) 124566-29-6, Lithium niobium  
tantalum oxide ( $\text{LiNb}_{0.9}\text{Ta}_{0.1}\text{O}_3$ ) 152126-22-2,  
Lithium niobium tantalum oxide

# 10/595,942-330158-EIC SEARCH

(LiNb0.35Ta0.65O3) 169227-36-5, Lithium niobate tantalate  
 (LiNb0.84Ta0.16O3) 169227-37-6, Lithium niobate tantalate  
 (LiNb0.59Ta0.41O3) 169227-38-7, Lithium niobate tantalate  
 (LiNb0.78Ta0.22O3) 169227-39-8, Lithium niobate tantalate  
 (LiNb0.32Ta0.68O3) 169227-40-1, Lithium niobate tantalate  
 (LiNb0.64Ta0.36O3) 169227-41-2, Lithium niobate tantalate  
 (LiNb0.88Ta0.12O3) 169227-42-3, Lithium niobate tantalate  
 (LiNb0.83Ta0.17O3) 169227-43-4, Lithium niobate tantalate  
 (LiNb0.24Ta0.76O3) 169227-44-5, Lithium niobate tantalate  
 (LiNb0.73Ta0.27O3) 169227-45-6, Lithium niobate tantalate  
 (LiNb0.85Ta0.15O3) 169227-46-7, Lithium niobate tantalate  
 (LiNb0.22Ta0.78O3) 169227-47-8, Lithium niobate tantalate  
 (LiNb0.91Ta0.09O3) 169227-48-9, Lithium niobate tantalate  
 (LiNb0.82Ta0.18O3) 169227-49-0, Lithium niobate tantalate  
 (LiNb0.71Ta0.29O3) 169227-50-3, Lithium niobate tantalate  
 (LiNb0.54Ta0.46O3) 177326-82-8, Lithium niobium tantalum  
 oxide (LiNb0.87Ta0.13O3) 177326-83-9, Lithium niobium  
 tantalum oxide (LiNb0.8Ta0.2O3) 177326-84-0,  
 Lithium niobium tantalum oxide  
 (LiNb0.69Ta0.31O3) 177326-85-1, Lithium niobium tantalum  
 oxide (LiNb0.56Ta0.44O3) 177326-86-2, Lithium niobium  
 tantalum oxide (LiNb0.44Ta0.56O3) 177326-87-3,  
 Lithium niobium tantalum oxide  
 (LiNb0.33Ta0.67O3) 177326-88-4, Lithium niobium tantalum  
 oxide (LiNb0.25Ta0.75O3) 177326-89-5, Lithium niobium  
 tantalum oxide (LiNb0.76Ta0.24O3) 177326-90-8,  
 Lithium niobium tantalum oxide  
 (LiNb0.75Ta0.25O3) 177326-91-9, Lithium niobium tantalum  
 oxide (LiNb0.72Ta0.28O3) 177326-92-0, Lithium niobium  
 tantalum oxide (LiNb0.7Ta0.3O3)

RL: DEV (Device component use); PEP (Physical, engineering or  
 chemical process); PROC (Process); USES (Uses)

(articles comprising lithium niobate tantalate films on a  
 single crystal substrate and their production)

IT 1313-96-8, Niobium oxide 1314-61-8, Tantalum  
 oxide 1314-62-1, Vanadium oxide, processes  
 12031-66-2, Lithium tantalate  
 12057-24-8, Lithium oxide, processes  
 15060-59-0, Lithium vanadate (LiVO3)

RL: PEP (Physical, engineering or chemical process); PROC  
 (Process)

(articles comprising lithium niobate tantalate films on a  
 single crystal substrate and their production)

L88 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 1996:180857 HCAPLUS Full-text

DOCUMENT NUMBER: 124:239810

ORIGINAL REFERENCE NO.: 124:44293a

TITLE: Properties and structures of TeO2 based  
 glasses containing ferroelectric components

AUTHOR(S): Hu, L.; Jiang, Z.

CORPORATE SOURCE: Shanghai Inst. Optics Fine Mechanics, Academia  
 Sinica, Shanghai, 201800, Peop. Rep. China

SOURCE: Physics and Chemistry of Glasses (1996  
 ), 37(1), 19-21

CODEN: PCGLA6; ISSN: 0031-9090

PUBLISHER: Society of Glass Technology

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 28 Mar 1996

AB TeO2 based LiTaO3, KNbO3, PbTiO3 and PbLaTiO3 ferroelec. components containing glasses  
 were prepared and examined. It was found that PbTiO3 and PbLaTiO3 containing TeO2 based  
 glasses have better thermal stability, higher refractive index and larger d. than KNbO3  
 and LiTaO3 containing TeO2 based glasses. From IR and Raman spectra results it is  
 deduced that PbTiO3 and PbLaTiO3 containing TeO2 based glasses consist of sym. TeO4  
 trigonal bipyramids and deformed TeO4 groups and that LiTaO3 and KNbO3 containing TeO2  
 based glasses consisting of TeO4 trigonal bipyramids and TeO3 trigonal pyramids. It is

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confirmed that the structural transition from TeO4 to TeO3 deteriorates the thermal stability in LiTaO3 and KNbO3 containing TeO2 based glasses.

IT 1314-61-0, Tantalum oxide  
12031-66-2, Lithium tantalate (LiTaO3) 12057-24-8, Lithium oxide, properties  
RL: PRP (Properties); TEM (Technical or engineered material use);  
USES (Uses)  
(glass; properties and structures of TeO2 based glasses containing ferroelec. components)  
RN 1314-61-0 HCAPLUS  
CN Tantalum oxide (Ta2O5) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12031-66-2 HCAPLUS  
CN Lithium tantalum oxide (LiTaO3) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

RN 12057-24-8 HCAPLUS  
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li\_O\_Li

CC 57-1 (Ceramics)  
IT Density  
Ferroelectric substances  
Glass temperature and transition  
Infrared spectra  
Raman spectra  
Refractive index and Optical refraction  
(properties and structures of TeO2 based glasses containing ferroelec. components)  
IT 1312-81-8, Lanthanum sesquioxide 1313-96-8, Niobium oxide  
1314-61-0, Tantalum oxide 1317-36-8,  
Lead monoxide, properties 7446-07-3, Tellurium oxide (TeO2)  
12030-85-2, Potassium niobate (KNbO3) 12031-66-2,  
Lithium tantalate (LiTaO3)  
12057-24-8, Lithium oxide, properties  
12060-00-3, Lead titanium oxide (PbTiO3) 12136-45-7, Potassium oxide, properties 13463-67-7, Titania, properties 114952-68-0,  
Lanthanum lead titanium oxide (LaPbTiO3)  
RL: PRP (Properties); TEM (Technical or engineered material use);  
USES (Uses)  
(glass; properties and structures of TeO2 based glasses containing ferroelec. components)  
OS.CITING REF COUNT: 15 THERE ARE 15 CAPLUS RECORDS THAT CITE THIS RECORD (16 CITINGS)

L88 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN  
ACCESSION NUMBER: 1980:576211 HCAPLUS Full-text  
DOCUMENT NUMBER: 93:176211  
ORIGINAL REFERENCE NO.: 93:27933a,27936a  
TITLE: Refractive indexes and surface morphology of  
LPE grown lithium (niobium, tantalum)  
) oxide (Li(Nb,Ta)O3) films on  
lithium tantalate(V)

## 10/595,942-330158-EIC SEARCH

substrates  
 AUTHOR(S): Kondo, Susumu; Miyazawa, Shintaro; Sugii, Kiyomasa; Iwasaki, Hiroshi  
 CORPORATE SOURCE: Musashino Electr. Commun. Lab., Nippon Telegr. and Teleph. Public Corp., Musashino, 180, Japan  
 SOURCE: Journal of Crystal Growth (1980), 50(3), 605-11  
 CODEN: JCRGAE; ISSN: 0022-0248  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 12 May 1984  
 AB Li(Nb,Ta)O<sub>3</sub> solid-solution films were grown on LiTaO<sub>3</sub> substrates from a Li<sub>2</sub>O-V<sub>2</sub>O<sub>5</sub> flux using an LPE technique. For obtaining the films suitable for optical waveguide applications, as-grown surface morphol., lattice parameter mismatches and refractive index differences between the film and the substrate were studied with regard to the solution composition Li<sub>2</sub>O content and Nb<sub>2</sub>O<sub>5</sub>/Ta<sub>2</sub>O<sub>5</sub> ratio in the starting solution (Li<sub>2</sub>O-(Nb<sub>2</sub>O<sub>5</sub>, Ta<sub>2</sub>O<sub>5</sub>)-V<sub>2</sub>O<sub>5</sub> affect the refractive indexes of the grown films. It was clarified that the ordinary and extraordinary refractive index differences,  $\Delta n_o$  and  $\Delta n_e$ , can be controlled independently in the range of  $0-5 \times 10^{-3}$  by varying the solution composition  
 IT 1314-61-0D, solid solns. with lithium oxide and niobium oxide 12031-66-2D, solid solns. with lithium niobate 12057-24-8D, solid solns. with niobium oxide and tantalum oxide  
 RL: PRP (Properties)  
 (refractive index of liquid phase epitaxially grown)  
 RN 1314-61-0 HCAPLUS  
 CN Tantalum oxide (Ta<sub>2</sub>O<sub>5</sub>) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12031-66-2 HCAPLUS  
 CN Lithium tantalum oxide (LiTaO<sub>3</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

RN 12057-24-8 HCAPLUS  
 CN Lithium oxide (Li<sub>2</sub>O) (CA INDEX NAME)

Li\_O\_Li

CC 73-2 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)  
 Section cross-reference(s): 75  
 ST refraction lithium niobium tantalum oxide  
 IT Refractive index and Optical refraction  
 (of lithium niobium tantalum oxide films)  
 IT Crystal structure  
 Surface structure  
 (of lithium niobium tantalum oxide films grown by liquid phase epitaxy on lithium tantalate substrates)  
 IT 1313-96-8D, solid solns. with lithium oxide and tantalum oxide 1314-61-0D, solid solns. with lithium oxide and niobium oxide 12031-63-9D, solid solns. with lithium tantalate 12031-66-2D, solid solns. with

## 10/595,942-330158-EIC SEARCH

lithium niobate 12057-24-8D, solid solns. with niobium  
oxide and tantalum oxide

RL: PRP (Properties)

(refractive index of liquid phase epitaxially grown)

L88 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 1973:519157 HCAPLUS Full-text

DOCUMENT NUMBER: 79:119157

ORIGINAL REFERENCE NO.: 79:19329a,19332a

TITLE: Stoichiometry and optical quality of  
lithium tantalate(V) single  
crystals

AUTHOR(S): Miyazawa, Shintaro; Iwasaki, Hiroshi

CORPORATE SOURCE: Musashino Electr. Commun. Lab., Nippon Telegr.  
and Teleph. Public Corp., Musashino, Japan

SOURCE: Review of the Electrical Communications  
Laboratories (1973), 21(5-6), 374-83  
CODEN: RELTAN; ISSN: 0029-067X

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 12 May 1984

AB The phase diagram of the  $\text{Li}_2\text{O}-\text{Ta}_2\text{O}_5$  system for starting melt compns.  $\text{Cl} = 49.0-54.25$   
mole %  $\text{Ta}_2\text{O}_5$  was determined by measuring the ferroelec. Curie temps. (TC) of the  
crystals cooled from the melts. The composition of the congruently melting solid (with  
 $\text{TC} = 618^\circ$ ) was  $\text{Cl} = 51.25$  mole %  $\text{Ta}_2\text{O}_5$ . Single crystals grown from the melt with  $\text{Cl} =$   
 $51.25$  mole %  $\text{Ta}_2\text{O}_5$  by the Czochralski method with the temperature controlled to  $\pm 0.25^\circ$   
during the crystal pulling with optically homogeneous ( birefringence variation of  $<10-$   
5 throughout the crystal). Such crystals were homogeneous in composition and TC value  
throughout the boule. For crystals with the congruent-melting composition, the ratio  
of the min. to the maximum transmitted light intensities ( $\lambda = 6328 \text{ \AA}$  from a He-Ne  
laser) increased from 0.25 to 3% as the light-beam diameter was increased from 1 to 6  
mm, resp.

IT 12031-66-2

RL: PEP (Physical, engineering or chemical process); PROC  
(Process)

(crystal growth of, elec. and optical properties in  
relation to)

RN 12031-66-2 HCAPLUS

CN Lithium tantalum oxide ( $\text{LiTaO}_3$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IT 1314-61-0

RL: PRP (Properties)

(system, lithium oxide-)

RN 1314-61-0 HCAPLUS

CN Tantalum oxide ( $\text{Ta}_2\text{O}_5$ ) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 12057-24-8

RL: PRP (Properties)

(system, tantalum oxide-)

RN 12057-24-8 HCAPLUS

CN Lithium oxide ( $\text{Li}_2\text{O}$ ) (CA INDEX NAME)

Li\_O\_Li

## 10/595,942-330158-EIC SEARCH

CC 70-1 (Crystallization and Crystal Structure)  
 Section cross-reference(s): 68, 73, 71  
 ST lithium tantalum oxide system; Curie temp  
 lithium tantalate; single crystal  
 lithium tantalate; birefringence  
 lithium tantalate  
 IT Crystal growth  
 Curie point, ferroelectric  
 (of lithium tantalum oxide)  
 IT Birefringence  
 (of lithium tantalum oxide single crystals)  
 IT 12031-66-2  
 RL: PEP (Physical, engineering or chemical process); PROC  
 (Process)  
 (crystal growth of, elec. and optical properties in  
 relation to)  
 IT 1314-61-0  
 RL: PRP (Properties)  
 (system, lithium oxide-)  
 IT 12057-24-8  
 RL: PRP (Properties)  
 (system, tantalum oxide-)  
 OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE  
 THIS RECORD (3 CITINGS)

L88 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 1973:76711 HCAPLUS Full-text  
 DOCUMENT NUMBER: 78:76711  
 ORIGINAL REFERENCE NO.: 78:12169a,12172a  
 TITLE: Stoichiometry and optical quality of  
 lithium tantalate single  
 crystals  
 AUTHOR(S): Miyazawa, Shintaro; Iwasaki, Hiroshi  
 CORPORATE SOURCE: Musashino Electr. Commun. Lab., Nippon Telegr.  
 Teleph. Public Corp., Musashino, Japan  
 SOURCE: Kenkyu Jitsuyoka Hokoku - Denki Tsushin  
 Kenkyusho (1972), 21(9), 1739-51  
 CODEN: DTKKAA; ISSN: 0415-3200  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Japanese  
 ED Entered STN: 12 May 1984

AB The phase diagram of the system  $\text{Li}_2\text{O}-\text{Ta}_2\text{O}_5$  was determined from the composition  
 dependence of the Curie temperature of  $\text{LiTaO}_3$ . The congruent composition was found to  
 be 48.75/51.25 in Li/Ta molar ratio, at which optically homogeneous single crystals of  
 $\text{LiTaO}_3$  can be grown from the melt. The extinction ratio of these crystals was 1.5% for  
 the 6328 Å light beam of about 4 mm diameter. On the other hand, change in  
 birefringence of a crystal grown from the stoichiometric melt (Li/Ta = 50/50) was  
 measured and agrees with calculated values. In order to grow high quality crystals from  
 the stoichiometric melt, it is required to control the temperature within  $\pm 0.3^\circ$ .  
 IT 12031-66-2  
 RL: PEP (Physical, engineering or chemical process); PROC  
 (Process)  
 (crystal growth of, optical quality and stoichiometry  
 in relation to)  
 RN 12031-66-2 HCAPLUS  
 CN Lithium tantalum oxide ( $\text{LiTaO}_3$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	3	17778-80-2
Ta	1	7440-25-7
Li	1	7439-93-2

IT 1314-61-0  
 RL: PRP (Properties)  
 (system, lithium oxide-)



## 10/595,942-330158-EIC SEARCH

RN 1314-61-0 HCAPLUS  
 CN Tantalum oxide (Ta2O5) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 12057-24-8  
 RL: PRP (Properties)  
 (system, tantalum oxide-)

RN 12057-24-8 HCAPLUS  
 CN Lithium oxide (Li2O) (CA INDEX NAME)

Li-O-Li

CC 70-1 (Crystallization and Crystal Structure)  
 ST growth lithium tantalum oxide  
 IT Optical property  
 (of lithium tantalate single crystals)  
 IT Crystal growth  
 (of lithium tantalate, optical  
 quality and stoichiometry in relation to)  
 IT 12031-66-2  
 RL: PEP (Physical, engineering or chemical process); PROC  
 (Process)  
 (crystal growth of, optical quality and stoichiometry  
 in relation to)  
 IT 1314-61-0  
 RL: PRP (Properties)  
 (system, lithium oxide-)  
 IT 12057-24-8  
 RL: PRP (Properties)  
 (system, tantalum oxide-)

L88 ANSWER 15 OF 16 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN  
 ACCESSION NUMBER: 1984-103832 [198417] WPIX  
 DOC. NO. CPI: C1984-044016 [199321]  
 TITLE: Lithium tantalate single  
 crystal vertical drawing - from melt of tantalum  
 pent:oxide and lithium oxide  
 in e.g. a crucible of iridium  
 DERWENT CLASS: E31; L03  
 INVENTOR: ENOKIDA K; TSUNODA M  
 PATENT ASSIGNEE: (TOKE-C) TOKYO SHIBAURA DENKI KK  
 COUNTRY COUNT: 1

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
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JP 59045999	A	19840315	(198417)*	JA	2[0]	
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APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
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JP 59045999 A		JP 1982-153842	
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19820906

PRIORITY APPLN. INFO: JP 1982-153842 19820906

ED 20050420

AN 1984-103832 [198417] WPIX

AB JP 59045999 A UPAB: 20050420

## 10/595,942-330158-EIC SEARCH

Tantalum pentoxide and lithium oxide in a prescribed molar ratio are charged directly into a crucible of platinum-platinum rhodium or iridium. After melting them, a single crystal of lithium tantalate is vertically drawn. Inclusion of impurities can be decreased. Sintering and grinding steps are not required. Defects during the growth of the single crystal can be obviated. The expensive raw materials can be efficiently used. The cost of the crystal substrate of LiTaO<sub>3</sub> can be lowered and quality surface wave resilient elements provided.

L88 ANSWER 16 OF 16 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN  
 ACCESSION NUMBER: 1977-47926Y [197727] WPIX  
 TITLE: Lithium tantalate light  
 modulating element production - using melt of  
 tantalum oxide and  
 lithium oxide to give single  
 lithium tantalate crystal  
 DERWENT CLASS: E31; L03; P81; V07  
 INVENTOR: TSUYA H  
 PATENT ASSIGNEE: (NIDE-C) NIPPON ELECTRIC CO  
 COUNTRY COUNT: 1

## PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
JP 52063743	A	19770526	(197727)*	JA		
<--						
JP 58048519	B	19831028	(198347)	JA		
<--						

## APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 52063743 A		JP 1975-140516	
19751121			

PRIORITY APPLN. INFO: JP 1975-140516 19751121

ED 20050417

AN 1977-47926Y [197727] WPIX

AB JP 52063743 A UPAB: 20050417

The LiTaO<sub>2</sub> light modulation element is produced from single crystal of lithium tantalate which is bred from the melt of tantalum oxide and lithium oxide having mol. ratio of Li/Ta of 1.15-1.25 by polarisation under 60-40 V/cm. electric field and heat treatment at 400-500 degrees C in oxygen atmos.

DATA NOT AVAILABLE FOR THIS ACCESSION NUMBER

=> d 188 15-16 full

L88 ANSWER 15 OF 16 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN  
 AN 1984-103832 [198417] WPIX Full-text  
 DNC C1984-044016 [199321]  
 TI Lithium tantalate single crystal vertical  
 drawing - from melt of tantalum pent:oxide and lithium  
 oxide in e.g. a crucible of iridium  
 DC E31; L03  
 IN ENOKIDA K; TSUNODA M  
 PA (TOKE-C) TOKYO SHIBAURA DENKI KK  
 CYC 1  
 PI JP 59045999 A 19840315 (198417)\* JA 2[0]  
 <--  
 ADT JP 59045999 A JP 1982-153842 19820906  
 PRAI JP 1982-153842 19820906

# 10/595,942-330158-EIC SEARCH

IPCR C30B0015-00 [I,A]; C30B0015-00 [I,C]; C30B0029-10 [I,C];  
C30B0029-30 [I,A]  
EPC C30B0015-00+29/30  
AB JP 59045999 A UPAB: 20050420  
Tantalum pentoxide and lithium oxide in a prescribed molar ratio are charged directly into a crucible of platinum-platinum rhodium or iridium. After melting them, a single crystal of lithium tantalate is vertically drawn.  
Inclusion of impurities can be decreased. Sintering and grinding steps are not required. Defects during the growth of the single crystal can be obviated. The expensive raw materials can be efficiently used. The cost of the crystal substrate of LiTaO3 can be lowered and quality surface wave resilient elements provided.  
FS CPI  
MC CPI: E35-N; L02-A09

L88 ANSWER 16 OF 16 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN  
AN 1977-47926Y [197727] WPIX Full-text  
TI Lithium tantalate light modulating element  
production - using melt of tantalum oxide and  
lithium oxide to give single lithium  
tantalate crystal  
DC E31; L03; P81; V07  
IN TSUYA H  
PA (NIDE-C) NIPPON ELECTRIC CO  
CYC 1  
PI JP 52063743 A 19770526 (197727)\* JA  
<--  
JP 58048519 B 19831028 (198347) JA  
<--

ADT JP 52063743 A JP 1975-140516 19751121  
PRAI JP 1975-140516 19751121  
IPCR C01G0035-00 [I,A]; C01G0035-00 [I,C]; C09K0003-00 [I,A];  
C09K0003-00 [I,C]; C30B0029-10 [I,C]; C30B0029-30 [I,A];  
C30B0033-00 [I,A]; C30B0033-00 [I,C]; C30B0033-04 [I,A];  
G02F0001-01 [I,C]; G02F0001-03 [I,A]; G02F0001-05 [I,A];  
H01L0041-24 [I,A]; H01L0041-24 [I,C]  
AB JP 52063743 A UPAB: 20050417  
The LiTaO2 light modulation element is produced from single crystal of lithium tantalate which is bred from the melt of tantalum oxide and lithium oxide having mol. ratio of Li/Ta of 1.15-1.25 by polarisation under 60-40 V/cm. electric field and heat treatment at 400-500 degrees C in oxygen atmos.  
FS CPI; GMPI; EPI  
MC CPI: E35-N; L02-G07; L03-D04; L03-G02

# 10/595,942-330158-EIC SEARCH

## FULL SEARCH HISTORY

=> d his nofile

(FILE 'HOME' ENTERED AT 12:55:42 ON 07 MAY 2010)

FILE 'HCAPLUS' ENTERED AT 12:55:49 ON 07 MAY 2010

E US20090108232/PN

L1 1 SEA SPE=ON ABB=ON PLU=ON US20090108232/PN  
D ALL  
SEL RN

FILE 'REGISTRY' ENTERED AT 12:58:40 ON 07 MAY 2010

L2 3 SEA SPE=ON ABB=ON PLU=ON (12031-66-2/BI OR 12057-24-  
8/BI OR 1314-61-0/BI)  
D SCA

FILE 'REGISTRY' ENTERED AT 13:03:10 ON 07 MAY 2010

FILE 'HCAPLUS' ENTERED AT 13:03:24 ON 07 MAY 2010  
D SCA L1

FILE 'REGISTRY' ENTERED AT 13:03:34 ON 07 MAY 2010

L3 1 SEA SPE=ON ABB=ON PLU=ON 12031-66-2/RN  
D SCA  
L4 1 SEA SPE=ON ABB=ON PLU=ON 1314-61-0/RN  
L5 1 SEA SPE=ON ABB=ON PLU=ON 12057-24-8/RN

FILE 'HCAPLUS' ENTERED AT 13:04:32 ON 07 MAY 2010

FILE 'REGISTRY' ENTERED AT 13:04:51 ON 07 MAY 2010  
D L3 CN  
D L4 CN  
D L5 CN

FILE 'HCAPLUS' ENTERED AT 13:05:36 ON 07 MAY 2010

L6 4831 SEA SPE=ON ABB=ON PLU=ON L3

FILE 'REGISTRY' ENTERED AT 13:05:52 ON 07 MAY 2010

L7 SET SMARTSELECT ON  
SEL PLU=ON L3 1- NAME : 5 TERMS  
SET SMARTSELECT OFF

FILE 'HCAPLUS' ENTERED AT 13:05:52 ON 07 MAY 2010

L8 4918 SEA SPE=ON ABB=ON PLU=ON L7  
L9 5233 SEA SPE=ON ABB=ON PLU=ON L6 OR L8  
L10 19677 SEA SPE=ON ABB=ON PLU=ON L4

FILE 'REGISTRY' ENTERED AT 13:06:15 ON 07 MAY 2010

L11 SET SMARTSELECT ON  
SEL PLU=ON L4 1- NAME : 12 TERMS  
SET SMARTSELECT OFF

FILE 'HCAPLUS' ENTERED AT 13:06:16 ON 07 MAY 2010

L12 30017 SEA SPE=ON ABB=ON PLU=ON L11  
L13 31488 SEA SPE=ON ABB=ON PLU=ON L10 OR L12  
L14 18247 SEA SPE=ON ABB=ON PLU=ON L5

FILE 'REGISTRY' ENTERED AT 13:06:58 ON 07 MAY 2010

L15 SET SMARTSELECT ON  
SEL PLU=ON L5 1- NAME : 5 TERMS  
SET SMARTSELECT OFF

FILE 'HCAPLUS' ENTERED AT 13:06:58 ON 07 MAY 2010

L16 28098 SEA SPE=ON ABB=ON PLU=ON L15  
L17 15108 SEA SPE=ON ABB=ON PLU=ON L14 AND L16

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L18	12990	SEA SPE=ON	ABB=ON	PLU=ON	L16 NOT L17
L19	4516	SEA SPE=ON	ABB=ON	PLU=ON	L6 AND L8
L20	18206	SEA SPE=ON	ABB=ON	PLU=ON	L10 AND L12
L21	39	SEA SPE=ON	ABB=ON	PLU=ON	L17 AND L19 AND L20
L22		QUE SPE=ON	ABB=ON	PLU=ON	(MOLAR OR MOLE) (4A)RATIO
L23	3	SEA SPE=ON	ABB=ON	PLU=ON	L21 AND L22
		D SCA			
		D 1-3 KWIC			
L24	1	SEA SPE=ON	ABB=ON	PLU=ON	L1 AND L23
		D SCA			
		D ABS			
L25	3	SEA SPE=ON	ABB=ON	PLU=ON	(LIO2) (2W) (TA2O5)
		D KWIC			
L26	2	SEA SPE=ON	ABB=ON	PLU=ON	0.975 (3W) 0.982
		D KWIC			
		D 2			
		D KWIC 2			
L27	18	SEA SPE=ON	ABB=ON	PLU=ON	GTOREQ(4A) 0.975
		D KWIC			
L28	10	SEA SPE=ON	ABB=ON	PLU=ON	LTOREQ(4A) 0.982
L29	0	SEA SPE=ON	ABB=ON	PLU=ON	L27 AND L28
L30	129	SEA SPE=ON	ABB=ON	PLU=ON	((LITHIUM OR DILITHIUM) (A) (OXIDE OR DIOXIDE) OR LIO2 OR O2LI OR LI2O OR OLI2) (5W) (TANTALUM(A) OXIDE OR TA2O5 OR O5TA)
		D KWIC			
		D 5 KWIC			
L31	10	SEA SPE=ON	ABB=ON	PLU=ON	L30 AND L22
		D KWIC			
		D 5 KWIC			
L32	1	SEA SPE=ON	ABB=ON	PLU=ON	L31 AND (L26 OR L27 OR L28)
		D KWIC			
L33	1	SEA SPE=ON	ABB=ON	PLU=ON	L32 AND L21
L34	3	SEA SPE=ON	ABB=ON	PLU=ON	L21 AND L22
L35	20	SEA SPE=ON	ABB=ON	PLU=ON	L21 AND ((L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34))
		D KWIC			
		D 3 KWIC			
		D SCA L1			
		E BIREFRINGENCE/CT 25			
		E E3+ALL			
L36	89176	SEA SPE=ON	ABB=ON	PLU=ON	BIREFRINGENCE+MAX/CT
L37	2	SEA SPE=ON	ABB=ON	PLU=ON	L36 AND L21
		D KWIC			
		D 2 KWIC			
L38	37641	SEA SPE=ON	ABB=ON	PLU=ON	BIREFRING?
L39	3	SEA SPE=ON	ABB=ON	PLU=ON	L21 AND L38
		D KWIC			
L40	19976	SEA SPE=ON	ABB=ON	PLU=ON	-.0.0005
		D KWIC			
L41	19976	SEA SPE=ON	ABB=ON	PLU=ON	0.0005
L42	850	SEA SPE=ON	ABB=ON	PLU=ON	L40 (4A) L41
		D KWIC			
L43	45	SEA SPE=ON	ABB=ON	PLU=ON	L40 (L) (L36 OR L38)
L44	45	SEA SPE=ON	ABB=ON	PLU=ON	L41 (L) (L36 OR L38)
L45	45	SEA SPE=ON	ABB=ON	PLU=ON	L43 AND L44
		D KWIC			
		D 30 KWIC			
L46	1	SEA SPE=ON	ABB=ON	PLU=ON	L42 (L) (L36 OR L38)
		D KWIC			
L47		QUE SPE=ON	ABB=ON	PLU=ON	LENS? OR OPTIC? OR OPTO?
L48	17	SEA SPE=ON	ABB=ON	PLU=ON	L21 AND L47
		D KWIC			
L49	4	SEA SPE=ON	ABB=ON	PLU=ON	L48 AND (L36 OR L38)
L50	1	SEA SPE=ON	ABB=ON	PLU=ON	L49 AND ((L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46))

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      D KWIC
L51      3 SEA SPE=ON  ABB=ON  PLU=ON  L48 AND L22
      D KWIC
      D KWIC 2
      D KWIC 3
L52      5 SEA SPE=ON  ABB=ON  PLU=ON  L48 AND (L22 OR L36 OR
      L38)
      D SCA
L53      3 SEA SPE=ON  ABB=ON  PLU=ON  L52 AND ((L23 OR L24 OR
      L25 OR L26 OR L27 OR L28 OR L29))
L54      4 SEA SPE=ON  ABB=ON  PLU=ON  L52 AND L30
L55      4 SEA SPE=ON  ABB=ON  PLU=ON  L53 OR L54
L56      1 SEA SPE=ON  ABB=ON  PLU=ON  L52 AND ((L40 OR L41 OR
      L42 OR L43 OR L44 OR L45 OR L46))
      D KWIC
L57      17 SEA SPE=ON  ABB=ON  PLU=ON  (L48 OR L49 OR L50 OR L51
      OR L52 OR L53 OR L54 OR L55 OR L56)
L58      1 SEA SPE=ON  ABB=ON  PLU=ON  L57 AND L1
      D KWIC
L59      QUE SPE=ON  ABB=ON  PLU=ON  PY=<2005 NOT P/DT
L60      QUE SPE=ON  ABB=ON  PLU=ON  (PY=<2005 OR PRY=<2005 OR
      AY=<2005 OR MY=<2005 OR REVIEW/DT) AND P/DT
L61      14 SEA SPE=ON  ABB=ON  PLU=ON  L57 AND (L59 OR L60)

FILE 'MEDLINE, BIOSIS, EMBASE' ENTERED AT 13:49:04 ON 07 MAY 2010
L62      0 SEA SPE=ON  ABB=ON  PLU=ON  L3
L63      24 SEA SPE=ON  ABB=ON  PLU=ON  L4
      D KWIC
L64      8 SEA SPE=ON  ABB=ON  PLU=ON  L5
L65      0 SEA SPE=ON  ABB=ON  PLU=ON  L63 AND L64
L66      145 SEA SPE=ON  ABB=ON  PLU=ON  L7
L67      262 SEA SPE=ON  ABB=ON  PLU=ON  L11
L68      183 SEA SPE=ON  ABB=ON  PLU=ON  L15
L69      0 SEA SPE=ON  ABB=ON  PLU=ON  L66 AND L67 AND L68

FILE 'DISSABS, PASCAL, CONFSCI, JAPIO, WPIX' ENTERED AT 13:51:44
ON 07 MAY 2010
L70      2760 SEA SPE=ON  ABB=ON  PLU=ON  L7
L71      12031 SEA SPE=ON  ABB=ON  PLU=ON  L11
L72      9963 SEA SPE=ON  ABB=ON  PLU=ON  L15
L73      25 SEA SPE=ON  ABB=ON  PLU=ON  L70 AND L71 AND L72
      D KWIC
L74      5 SEA SPE=ON  ABB=ON  PLU=ON  L73 AND L22
      D KWIC
L75      1 SEA SPE=ON  ABB=ON  PLU=ON  L73 AND L38
      D KWIC
L76      1 SEA SPE=ON  ABB=ON  PLU=ON  L74 AND L75
      D KWIC
L77      5 SEA SPE=ON  ABB=ON  PLU=ON  (L74 OR L75 OR L76)
L78      1 SEA SPE=ON  ABB=ON  PLU=ON  L77 AND ((L25 OR L26 OR
      L27 OR L28))
      D QUE L30
L79      2 SEA SPE=ON  ABB=ON  PLU=ON  L77 AND L30
      D SCA
L80      1 SEA SPE=ON  ABB=ON  PLU=ON  L77 AND (L40 OR L41)
      D KWIC

FILE 'HCAPLUS' ENTERED AT 13:59:09 ON 07 MAY 2010
L81      18 SEA SPE=ON  ABB=ON  PLU=ON  0.0005(3A) (PLUS OR MINUS)
      D KWIC
L82      0 SEA SPE=ON  ABB=ON  PLU=ON  L81 AND L39

FILE 'DISSABS, PASCAL, CONFSCI, JAPIO, WPIX' ENTERED AT 14:00:40
ON 07 MAY 2010
L83      1 SEA SPE=ON  ABB=ON  PLU=ON  L77 AND L81
      D KWIC
L84      5 SEA SPE=ON  ABB=ON  PLU=ON  (L77 OR L78 OR L79 OR L80)

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OR L83  
SAV TEMP L84 PEE942MULT/A  
L85 0 SEA SPE=ON ABB=ON PLU=ON L84 AND L59  
L86 3 SEA SPE=ON ABB=ON PLU=ON L84 AND L60  
L87 3 SEA SPE=ON ABB=ON PLU=ON L85 OR L86  
SAV TEMP L87 PEE942MULT/A

FILE 'HCAPLUS' ENTERED AT 14:08:48 ON 07 MAY 2010  
SAV TEMP L61 PEE942HCP/A

FILE 'STNGUIDE' ENTERED AT 14:09:18 ON 07 MAY 2010  
D QUE L61  
D QUE L69  
D QUE L87

FILE 'HCAPLUS, WPIX' ENTERED AT 14:12:26 ON 07 MAY 2010  
L88 16 DUP REM L61 L69 L87 (1 DUPLICATE REMOVED)  
ANSWERS '1-14' FROM FILE HCAPLUS  
ANSWERS '15-16' FROM FILE WPIX  
D L88 1-16 IBIB ED ABS HITSTR HITIND  
D L88 15-16 FULL